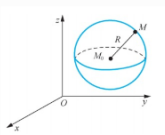


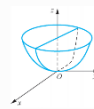
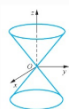
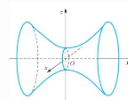
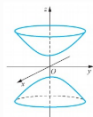
平面 所有变量的系数都为1

$$\begin{cases} \text{球面} & \begin{cases} x^2 + y^2 + z^2 + Dx + Ey + Fz = G \\ \text{不含 } xy, xz, yz \end{cases} \\ & \begin{cases} r^2 > 0 & \text{球} \\ r^2 = 0 & \text{点球} \\ r^2 < 0 & \text{空球} \end{cases} \end{cases}$$



$$\begin{cases} \text{柱面} & \begin{cases} \text{圆柱面} & x^2 + y^2 = R^2 \\ \text{椭圆柱面} & \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1 \\ \text{抛物柱面} & x^2 = 2py \\ \text{双曲柱面} & \frac{x^2}{a^2} - \frac{y^2}{b^2} = 1 \end{cases} \end{cases}$$

$$\begin{cases} \text{波阵面} & f(y, z) \Rightarrow f(\pm\sqrt{x^2 - y^2}, z) = 0 \text{ (含有两个变量的平方和)} \\ & \begin{cases} \text{波阵面} & \frac{z^2}{C^2} - \frac{x^2}{a^2} - \frac{y^2}{b^2} = 1 \Leftrightarrow \text{双叶双曲面} & -\frac{x^2}{a^2} - \frac{y^2}{b^2} + \frac{z^2}{C^2} = 1 \quad \leftarrow \text{两个系数为负} \\ \text{波阵面} & \frac{x^2}{C^2} - \frac{y^2}{b^2} = 1 \Leftrightarrow \text{单叶双曲面} & \frac{x^2}{C^2} + \frac{y^2}{b^2} - \frac{z^2}{C^2} = 1 \quad \leftarrow \text{一个系数为负} \\ & \text{波阵面球面} & \frac{x^2}{C^2} + \frac{y^2}{b^2} + \frac{z^2}{C^2} = 1 \\ & \text{波阵面} & \frac{x^2}{a^2} + \frac{y^2}{b^2} = z^2 \text{ (a, b 相等)} \Leftrightarrow \text{椭圆锥面} & \frac{x^2}{a^2} + \frac{y^2}{b^2} = z^2 \text{ (a, b 不相等)} \Rightarrow \text{锥面} \\ & \text{波阵面} & z = \frac{x^2}{a^2} + \frac{y^2}{b^2} \text{ (a, b 相等)} \Leftrightarrow \text{椭圆抛物面} & z = \frac{x^2}{a^2} + \frac{y^2}{b^2} \text{ (a, b 不相等)} \Rightarrow \text{抛物面} \\ & & \text{椭圆面} & \frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{C^2} = 1 \end{cases} \end{cases}$$



$$\text{双曲抛物面} \quad z = -\frac{x^2}{a^2} + \frac{y^2}{b^2}$$

